Using FES and WBV for Treatment of Children with Cerebral Palsy

Presented by: Susan Hastings, PT, DPT, PCS

Hosted by: Physical Therapy School of Health Professions University of Missouri Health

Presented by: Gerti Motavalli, PT, MS

Pediatric Physical Therapist

email: gertimotavalli@gmail.com

Date: August 4 - 5, 2018
Location: 616 Clark Hall, Columbia, MO—University of Missouri

Intended Audience: PT, PTA, MD, and PHDs interested in physical rehabilitation.

Contact Hours: 15 contact hours. This course and instructor meet the specifications to qualify for continuing education requirements.

INSTRUCTOR:

Susan Hastings, PT, DPT, PCS is a Pediatric Certified Specialist since 2004, who graduated from Rocky Mountain University of Health Professions with a tDPT, specializing in Pediatrics. Susan has been using functional electrical stimulation (FES) in children with upper motor neuron lesions for the past 18 years. She added Whole Body Vibration (WBV) to her treatment sessions for the last 5 years with excellent results, and presented her findings at Combined Sections Meeting 2016 and at APTA SoPAC 2016 where she co-taught a pre-conference course with Beverly Cusick. In 2017, she was invited to present at the California APTA Annual Conference, as well as 2016 New Mexico APTA Annual Conference. She is teaching a lecture/lab course, “Sparking New Change in Children with Diplegic Cerebral Palsy” with Beverly Cusick. From 2010-2013, Susan was co-instructor in teaching FES courses with Judy Carmick. After working for many years as Sr. Therapist for Santa Clara County California Children Services (CCS), she started her own private practice specializing in treating children with cerebral palsy using FES and WBV in 2010. Susan has been asked to assist in courses taught by notable pediatric therapists, including Beverly Cusick (biomechanics and casting), Judy Carmick (FES), Mary Massery (function and breathing), Lois Bly (NDT baby treatment), and Lauren Beeler (NDT).

COURSE DESCRIPTION:

This 2-day lecture/lab course teaches how to apply and use functional electrical stimulation (FES) and whole body vibration (WBV), as an alternative to or in conjunction with other recommended interventions to manage the problems of decreased functional strength, ROM, and balance in children with cerebral palsy. Immediate within sessions results, as well as long-term results, will be shown using videos of actual patients treated using FES and WBV. The speaker will showcase presentation of children with different forms of CP (hemiplegia, diplegia, quadriplegia, ataxic, and dystonic) from Levels I to V, with emphasis on participation in daily life, as well as parent and child satisfaction with results. Objective progress will be shown through changes in GMFCS levels, SCALE score changes and Peds Quality of Life Survey. Participants will learn on recommended electrical stimulation equipment and WBV equipment to be able to use immediately in their practice upon completion of the lab.

OBJECTIVES

At the end of this course, participants will be able to:

- Identify 2 reasons why NMES/FES is not used more in physical therapy in children and adults with neurological injuries, despite evidence showing efficacy.
- Discuss the definition of spasticity and how it affects patient outcomes.
- Recognize and discuss the long-term outcomes, identified in the literature, of interventions current interventions in cerebral palsy: surgeries (including selective dorsal rhizotomy), injections of Botulinum Toxin, and pharmacological interventions, such as Baclofen.
- Explain why alignment and keeping COM back affects all aspects of treatment and list 2 strategies to help align the child during treatment.
• Relate principles of motor control and motor learning enhancement through use of NMES/FES and WBV.
• List where synaptogenesis occurs in response to strengthening vs. cardio-training vs. skill training, and how these affect long-term motor learning.
• Recognize why long-term motor learning is possible with FES, and understand difficulties in translation into evidence, with attention to differences in terminology and outcome measures in current literature.
• Relate differences between using FES and WBV in treatment and what each can provide.
• Understand reasoning behind targeting the adductors in treatments using FES and WBV in children with cerebral palsy.
• Describe the different forms and techniques of electrical stimulation used in the clinic.
• Explain the differences in equipment and technique used for using FES in the pediatric population as compared to adults.
• State principles and working mechanisms of WBV
• State 3 indications, precautions, and contraindications of NMES/FES.
• Demonstrate novice skill level in programming the electrical stimulation unit and the WBV machine
• Explain the uses for different parameters/settings in electrical stimulation and WBV.
• Demonstrate novice skill level in choosing electrodes and their placement for treatment when using FES, using single or multiple units.
# FES and WBV in Children with Cerebral Palsy Schedule

## Saturday, August 4th, 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00AM</td>
<td>Register and settle in.</td>
</tr>
<tr>
<td>8:15AM</td>
<td>Introductions and discussion on participant’s experience using electrical stimulation. Are you getting what you want?</td>
</tr>
<tr>
<td>8:30AM</td>
<td>Electrical Stimulation Review: terms, units, and setting, as well as Whole Body Vibration (WBV) units and settings. Choosing the equipment for best outcomes in pediatrics. Why use more than one unit during treatment.</td>
</tr>
<tr>
<td>9:30AM</td>
<td>WBV: New Evidence-Based Treatment for Children with CP</td>
</tr>
<tr>
<td>10:15AM</td>
<td>BREAK</td>
</tr>
<tr>
<td>10:30AM</td>
<td>WBV Pediatric Literature Review</td>
</tr>
<tr>
<td>10:45AM</td>
<td>Case Presentations: Children who have used FES (multiple units) and WBV—what is possible.</td>
</tr>
<tr>
<td>1:00PM</td>
<td>Intro Lab using electrical simulation units and whole body vibration (depending) on WBV unit availability). Choosing parameters to get what you want in pediatrics, choosing electrodes, planning treatment.</td>
</tr>
<tr>
<td>2:30PM</td>
<td>Muscle synergies and myofascial force transmissions: how these impact electrode placement. Why stimulate the adductors?</td>
</tr>
<tr>
<td>3:15PM</td>
<td>BREAK</td>
</tr>
<tr>
<td>3:30PM</td>
<td>Lab: considerations, rationale, and practice using the remote hand switch with unit(s) for functional movement patterns (more than one muscle group in the pattern) to feel comfortable using in treatment. Differences in using NMES vs FES for treatment. Practice using WBV.</td>
</tr>
<tr>
<td>4:30PM</td>
<td>Tips for Success for treatment and home program.</td>
</tr>
<tr>
<td>5:00PM</td>
<td>Putting it all together</td>
</tr>
<tr>
<td>5:15PM</td>
<td>Questions and discussion</td>
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## Sunday, August 5th, 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00AM</td>
<td>Introductions &amp; discussion on participants experience using electrical stimulation. Are you getting what you want?</td>
</tr>
<tr>
<td>8:30AM</td>
<td>Spasticity-definition and contrary views.</td>
</tr>
<tr>
<td>9:00AM</td>
<td>How do we currently treat spasticity? Look at outcomes: surgery, BTX, Baclofen, SDR, other?</td>
</tr>
<tr>
<td>10:00AM</td>
<td>How does alignment affect hypertonus?</td>
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<tr>
<td>10:15AM</td>
<td>BREAK</td>
</tr>
<tr>
<td>10:30AM</td>
<td>What do we know about moto control/motor learning in current treatments we currently use for cerebral palsy?</td>
</tr>
<tr>
<td>11:30AM</td>
<td>LUNCH</td>
</tr>
<tr>
<td>12:30PM</td>
<td>What does FES do and why are we not using it more?</td>
</tr>
<tr>
<td>1:45PM</td>
<td>Case Presentations: Video, problem based treatment plans (Part 1)</td>
</tr>
<tr>
<td>2:45PM</td>
<td>BREAK</td>
</tr>
<tr>
<td>3:00PM</td>
<td>Case Presentations: Video, problem based treatment plans (Part 2)</td>
</tr>
<tr>
<td>4:00PM</td>
<td>Let’s talk about the adductors</td>
</tr>
<tr>
<td>5:15PM</td>
<td>Discussion and questions</td>
</tr>
<tr>
<td>5:30PM</td>
<td>Adjourn</td>
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Using FES and WBV for Treatment of Children with Cerebral Palsy Registration Form

Name: _____________________________  Credentials: _____________________________
Address: __________________________ City/State/Zip: ___________________________
Phone: _____________________________  ☐ Work  ☐ Cell
Email: _________________________________

CHECK ONE:
☐ Early Registration: by July 13, 2018—$390
☐ Late Registration: after July 13, 2018—$410

Payment by check or money order payable: University of Missouri.
Check will be cashed upon receipt.
Register by mailing payment to:

Using FES & WBV Treatment
Department of Physical Therapy
University of Missouri
801 Clark Hall
Columbia, MO 65211-4250

Registration confirmation will be emailed to you within a week of receiving your tuition payment. Maintain your registration confirmation for your records. Directions will be emailed two weeks prior to the course.

Refund policy: Refunds, less $25 cancellation fee, will be given if a written request is received two weeks prior to the start of the course; no refunds thereafter. If the course is cancelled, full tuition refunds will be made.

Questions? Please contact the University of Missouri, Department of Physical Therapy at 573-882-7103. Fax: 573-884-8369 Email: MUSHPPT@missouri.edu